

HOTS-BASED STUDENT WORK SHEET DEVELOPMENT AT FOURTH GRADE OF ELEMENTARY SCHOOL

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Abstract. Development is an effort to develop products that are effectively used by schools, but not used to test theory. The purpose of this development is to develop a new product or improve an existing product. This study aims to [1] determine the development of HOTS-based worksheets in science learning in class IV. [2] To find out the validity of HOTS-based LKPD in science learning in class IV. The model used in this research is ADDIE. The first subjects in this study were 4 validators and students of class IV MI Al-Istiqamah. The object of this research is the creation of HOTS-based LKPD in science learning. The data analysis technique used descriptive analysis obtained from the validation test data and readability test data. The results of this study indicate that the development of HOTS-based worksheets in terms of design: cover appearance is attractive, complete and the images presented are in accordance with the material. The results of the validity of the HOTS-based LKPD in science learning class IV were validated by 4 experts and by carrying out a readability test conducted by 3 students, including: media experts 90.64%, material experts 83.39%, linguists 75%, expert user or teacher 85.25% readability test 92.35%. Based on the results of the validity score of the experts, the HOTS-based LKPD is valid and feasible to use.

Keywords: Development, LKPD, HOTS, Critical Thinking, Fourt Grade of Elementary School.

1. INTRODUCTION

Education in the 5.0 era is oriented towards creative, innovative and productive skills and knowledge as well as critical thinking [1]. This leads the education sector to always develop in all aspects, one of which is learning media such as teaching materials in class [2]. Educational development is an effort to improve the quality of superior human resources in every learning domain, so that each individual is able to drive the economic, social, technological, skills and welfare fields [3].

Allah SWT has created humans as intelligent beings, therefore instructions have been given to humans to be able to use their minds, thoughts and emotions to protect themselves from temptations in the world according to Surah Al-Hasyr verse 21. This verse can be a reminder for humans to always

thinking [4]. With regard to the aspect of thinking, Indonesia is still included in a country with weak high-level thinking skills. Based on the results of the 2018 PISA [Program for International Student Assessment] survey, Indonesia is ranked 75th out of 80 countries. Indonesia is a country that is in a low position in solving HOTS-based questions [5].

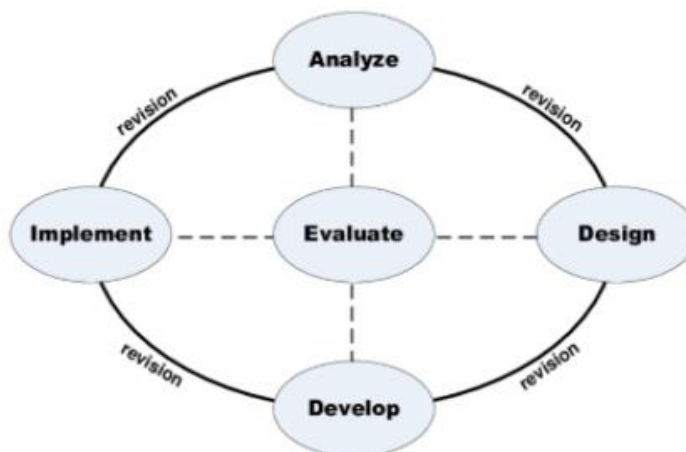
Student test results in mathematics, science, and language in Indonesia whose proficiency is still relatively low, only knowing is used to answer questions. In addition, students in Indonesia still lack higher-order thinking skills [HOTS] and instead have lower-order thinking skills [LOTS] [6]. Students are not used to assessing, evaluating, and creating different components or variables to find answers to problems. Learning resources for grades K–13 also include aspects of HOTS, which are often not systematically and thoroughly provided by teachers to students [7]. Because of that HOTS learning is very important for students to improve the quality of education. Of course this requires efforts to improve the quality of education in Indonesia. The effort made is not only from how the teacher teaches but also the teaching materials used. A good teacher is a teacher who has innovation in teaching, always updating and developing teaching materials in educating students. Development is an attempt to develop effective products that schools use, but are not used to test theory [8]. Self-development in the world of education is a relatively new research, known as R&D [Research and Development]. One of the products that can be developed is LKPD. LKPD is part of learning. There are many types of LKPD developed from previous research, one of which is HOTS-based LKPD [9].

HOTS are the ability to think at a higher level. Higher-order thinking is part of critical thinking. HOTS can be interpreted as a complete or complex reasoning cycle capacity by combining separate material, learning and being able to solve a problem by thinking critically [6]. HOTS are students' stages in thinking at a higher cognitive level starting from reasoning, critical thinking in processing information, making decisions, and being creative in solving a problem. [10]. Tentunya dari definisi tersebut ranah HOTS mengarah pada ranah kognitif siswa agar siswa mampu mengembangkan pengetahuannya tidak hanya dengan mengingat materi saja [11] but also able to apply in life. HOTS is a thinking concept developed in the bloom taxonomy model [6]. In making HOTS-based questions that refer to the taxonomy of bloom which has been revised by Karthwoll and Anderson. The level of questions can be said to be HOTS if they are at the cognitive level C4 analyzing, C5 evaluating, and C6 creating. Meanwhile, at the LOTs level, they are at cognitive levels C1, C2, and C3. Based on the results of the initial assessment of PPL II at MI Al-Istiqamah, fourth grade students and through interviews with PPL II colleagues at another school, MI Siti Maryam, experienced the same problem, namely difficulties in answering questions based on HOTS, it was seen that only a few students were able to solve the questions. exercise that has a HOTS category. Because students are not used to working on HOTS-based questions, this is because in the handbook students still use practice questions which are classified as LOTs [Low Order Thinking Skills] questions. Science learning has such a close relationship with human life, energy sources cannot be separated from human life. Science learning is a learning that is easy to apply HOTS to train students' critical thinking skills [12]. There are so many natural resources that provide benefits to humans, which are studied in class IV. The development of HOTS-based worksheets in science learning is developed in class IV, because they already have good reasoning abilities. So it is good to foster critical thinking skills through HOTS-based LKPD.

METHOD

This research uses a type of field research, with a Research and Development research approach or what is often referred to as R&D. The research design used in this study uses the ADDIE development model. There are five stages in R & D research with the ADDIE development model, namely analysis [Analyze], design [Design], development [Development], implement [Implement], and evaluate [Evaluate]. The subjects in this study were 4 validators and fourth grade students at MI Al-Istiqamah. The object of this research is the creation of HOTS-based LKPD in science learning. Data collection techniques are using questionnaires or questionnaires, documentation, and literature study. The data analysis technique uses descriptive analysis which is obtained from the validation test data and

readability test data. LKPD that has been validated can identify the percentage of eligibility according to the validation test category [13].



Picture 1. ADDIE Design

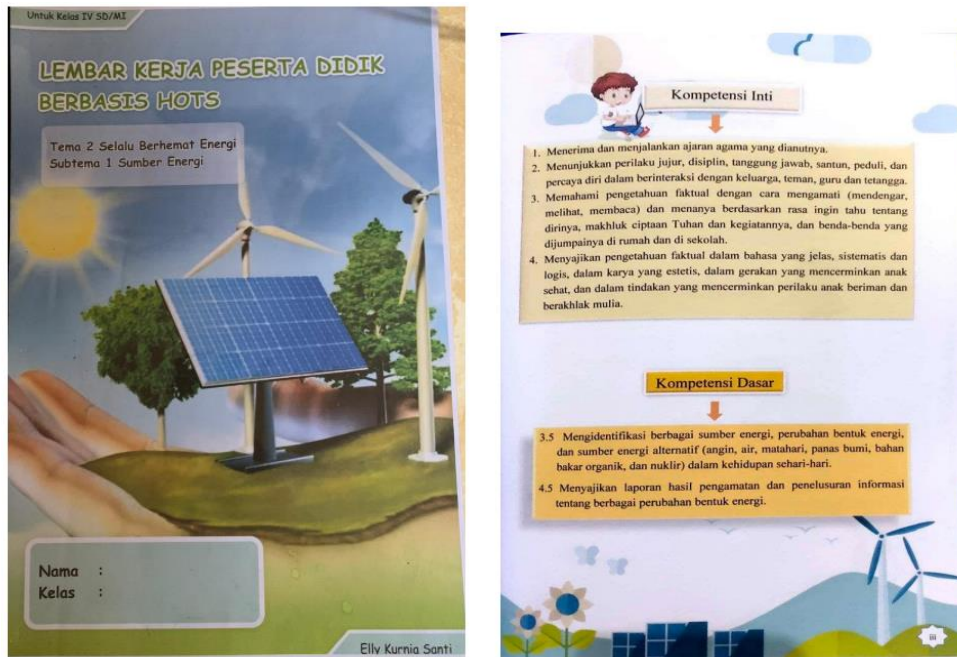
2. RESULT AND DISCUSSION[14]

The result of this research is the development of HOTS-based LKPD in Science Learning Class IV. This research is a development research called R&D using the ADDIE model. The ADDIE development model has several stages, namely: analysis [Analyze], design [Design], development [Development], implementation [Implement], and evaluation [Evaluate]. However, in this study, researchers limited it only to the development stage, because it was in accordance with the research objectives, namely to develop HOTS-based LKPDs and find out the validity of LKPDs so that they were suitable for use.

The first stage in this research is to analyze. The analysis carried out at this stage is sourced from the results of observations made by researchers on the teaching materials used. The analysis phase performs two analyses, namely performance analysis and needs analysis. Performance analysis is an analysis to understand and classify problems with teaching materials used by schools. Performance analysis is an analysis to understand and classify problems with teaching materials used by schools [15]. Analisis kebutuhan merupakan memperbaiki bahan ajar yang digunakan oleh peserta didik guna meningkatkan kemampuan dan kualitas pembelajaran menjadi lebih baik dari sebelumnya. Oleh karena itu peneliti mengembangkan LKPD berbasis HOTS yang dapat meningkatkan kualitas peserta didik dan meningkatkan kemampuan berpikir kritis.

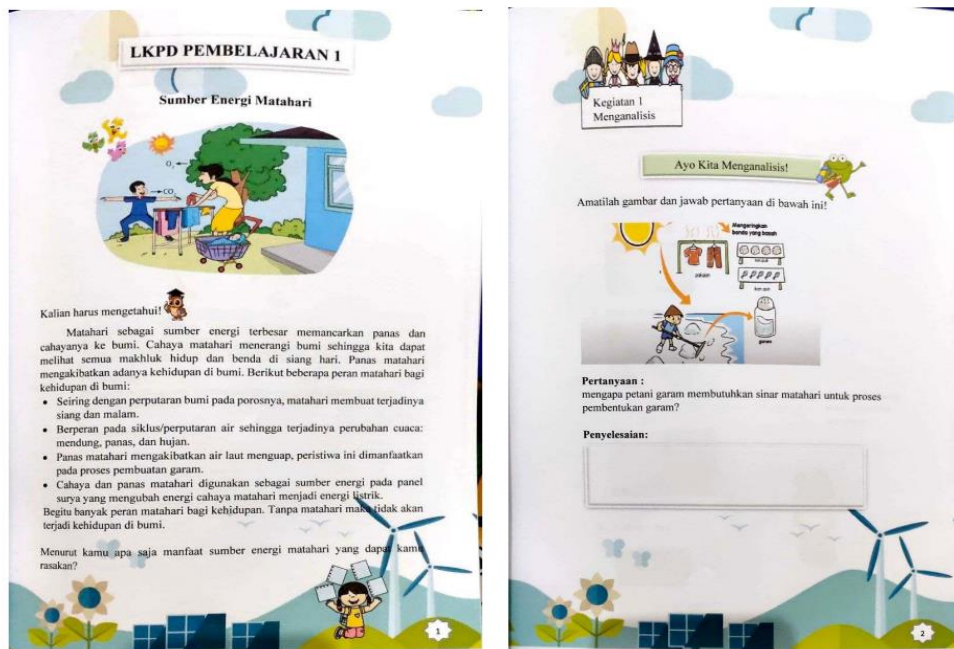
The HOTS-based LKPD development design in terms of design is in accordance with the elements in the LKPD. The first is the cover containing "HOTS-Based Student Worksheets in Class IV SD/MI Science Learning". The second sheet contains a table of contents to make it easier for students to find the page they want to go to. The third sheet contains study instructions that must be in the LKPD to make it easier for students to study the LKPD. The next sheet contains KI, KD, indicators and objectives achieved along with materials, HOTS-based practice questions and evaluations. The LKPD format adds pictures in each sub-material to clarify the material.

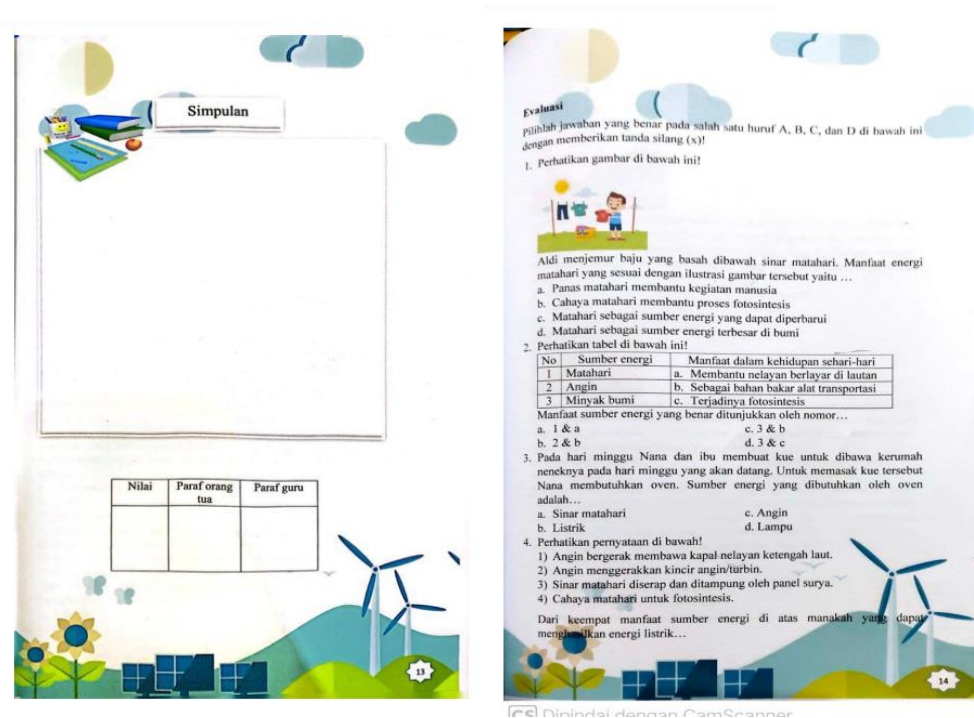
Tahap ketiga yaitu pengembangan dimana peneliti mengembangkan produk sesuai dengan desain yang telah dibuat sebelumnya [16]. In this stage the researcher begins to make LKPD. Starting from the Cover on the LKPD is made interesting. HOTS-based materials, activity questions, and evaluations are presented in accordance with the basic competencies and indicators achieved. The animations and pictures made in LKPD are attractive and suitable for use by teachers. The HOTS-based LKPD made several improvements to get the result that the language used was clear, unambiguous, easy, and in accordance with PEUBI. This LKPD is designed to contain HOTS-based evaluations to measure students' cognitive abilities. The following is the LKPD design developed:



Picture 2. Cover and Kompetensi Inti

Picture 1 shows the cover on the LKPD and the basic competencies achieved. LKPD is a learning tool that contains content and problems that must be responded to by students and also emphasizes the student's ability to solve a problem or the ability to think critically. In compiling LKPD, of course there are criteria or components that must be in the LKPD adapted by Katriani as follows: title, study guide, basic competence or subject matter, supporting information, and work steps or assignments. HOTS-based worksheets that are designed to be attractive can make students more enthusiastic about learning, think critically, and can motivate students. So it is hoped that this LKPD can help students in the learning process and can improve critical thinking skills, especially in learning science in grade 4 SD/MI.





Picture 3. HOTS-based LKPD

Picture 3 shows is part of the contents of the HOTS-based LKPD. The HOTS section in the LKPD includes HOTS-based activities and evaluation questions. According to Bloom HOTS leads to the level of analyzing, evaluating and creating. The main purpose of HOTS according to [17] is to help students develop their ability to reason critically, especially with regard to basic skills in collecting various types of information or data, using creativity to solve problems using prior knowledge, and being able to make decisions in different situations. challenge. The results of LKPD validation from experts are as follows:

Table 1. The results of LKPD validation

No.	Validator	Persentase [%]
1.	Media	90,64
2.	Materi	83,39
3.	Bahasa	75
4.	Penggunaan	85,25

Based on the results of the validation above carried out by online media experts, a score of 90.64% was obtained with a very valid category and there was no input or suggestions from the validator. So that the HOTS-based LKPD is feasible to use. The results of the validation carried out by material experts who were carried out offline obtained a score of 83.39% with the valid category getting some suggestions and input from material experts, so they made revisions according to the suggestions that had been given. The validation results from linguists who were carried out offline obtained a score of 75% in the valid category, received suggestions and input from linguists with several revisions according to the suggestions. After the linguist validation has been completed, then the results of the user or teacher validation will determine whether the developed product is feasible and suitable for use as teaching material. The results of user expert validation which was carried out offline obtained a score of 85.25% in a very valid category and received little input and suggestions that had been given.

The readability test was carried out after expert validation was completed. The purpose of having a readability test is to find out the ease and understanding of students towards the LKPD products that

have been made [18]. The readability test was carried out by 3 students. Prior to being given legibility instrument sheets, students were given an explanation of how to fill out the instrument sheets that were distributed. Based on the results of the readability test of 3 students, an overall average score of 92.35% was included in the very decent category. Based on the 18 assessment indicators, there are 8 assessment indicators included in the valid category and 10 indicators included in the very valid category. So it can be concluded that the HOTS-based LKPD that has been developed by researchers has fulfilled the aspects and is feasible to use.

3. CONCLUSION

Development of HOTS-based LKPD in terms of design: the appearance of the cover is attractive, complete and the pictures presented are in accordance with the material. In terms of material: clear, accurate, involving examples and cases from everyday life, and evaluation based on HOTS. In terms of language: straightforward, easy to understand, and in accordance with the rules of the language.

The results of the validity of the HOTS-based LKPD in science learning class IV were validated by 4 experts and by carrying out a readability test conducted by 3 students, including: media experts 90.64%, material experts 83.39%, linguists 75%, user expert or teacher 85.25% and readability test 92.35%. Based on the results of the validity score of the experts, the HOTS-based LKPD is valid and feasible to use

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